In the Claims

Please amend claim 69. Please add new claims 79-86.

Listing of Claims:

1. **(Cancelled)**
2. **(Cancelled)**
3. **(Cancelled)**
4. **(Cancelled)**
5. **(Cancelled)**
6. **(Cancelled)**
7. **(Cancelled)**
8. **(Cancelled)**
9. **(Cancelled)**
10. **(Cancelled)**
11. **(Cancelled)**
12. **(Cancelled)**
13. **(Cancelled)**
14. **(Cancelled)**
15. **(Cancelled)**
16. **(Cancelled)**
17. **(Cancelled)**
18. **(Cancelled)**

19. **(Cancelled)**

20. **(Cancelled)**

21. **(Cancelled)**

22. **(Previously Amended)** A circuit board substrate assembly comprising a substrate material having first and second opposed edges, the substrate material comprising:

a plurality of circuit forming regions comprising at least one pair of adjacent circuit forming regions;

a first interconnection region and a second interconnection region, wherein the first interconnection region extends along the first edge and is located between the first edge and the plurality of circuit forming regions, wherein the second interconnection region extends along the second edge and is located between the second edge and the plurality of circuit forming regions; and

a single opening defined in the substrate material between each pair of adjacent circuit forming regions, wherein the single opening extends into at least portions of both the first interconnection region and second interconnection region.

23. **(Original)** The assembly of claim 22, wherein the substrate material further comprises a first end and a second end, wherein the plurality of circuit forming regions lie along a length of the substrate material between the first end and the second end, the length being defined along a longitudinal axis.

24. **(Original)** The assembly of claim 23, wherein both the first edge and second edge of the substrate material are substantially parallel to the longitudinal axis.

25. **(Previously Amended)** The assembly of claim 23, wherein the single opening comprises a first and second opposing end portion with the first end portion thereof lying along a

first singulation axis of the substrate material parallel to the longitudinal axis and the second end portion of the single opening lying along a second singulation axis of the substrate material parallel to the longitudinal axis.

26. **(Previously Amended)** The assembly of claim 23, wherein the single opening is a single slot extending generally orthogonal to the longitudinal axis.

27. **(Original)** The assembly of claim 23, further comprising one or more circuits formed in the circuit forming regions of the substrate material resulting in a plurality of individual circuit board portions, wherein at least one of the plurality of individual circuit board portions has a length orthogonal to the longitudinal axis.

28. **(Previously Amended)** The assembly of claim 27, wherein the single opening has a length that is orthogonal to the longitudinal axis, and further wherein the length of the single opening is greater than the length of the at least one of the plurality of individual circuit board portions.

29. **(Original)** The assembly of claim 27, wherein the one or more circuits comprise ball grid array configurations.

30. **(Original)** The assembly of claim 27, wherein the one or more circuits comprise surface mount component configurations.

31. **(Previously Amended)** The assembly of claim 22, wherein the single opening comprises a slot extending into at least portions of the first and second interconnection regions.

32. **(Previously Amended)** The assembly of claim 22, wherein the single opening between

each pair of adjacent circuit forming regions is configured such that the plurality of circuit forming regions are separable by using a material removal tool operable to move along one or more parallel singulation axes to remove at least portions of the first and second interconnection regions.

33. **(Original)** A circuit board substrate assembly comprising a substrate material, wherein the substrate material comprises a plurality of rows of circuit forming regions lying along a length of the substrate material, wherein each row comprises at least one pair of adjacent circuit forming regions, wherein a singulation axis is defined between each pair of adjacent rows, wherein at least one pair of adjacent circuit forming regions in at least one row is separated by at least one opening defined in the substrate material that intersects with a singulation axis defined between the at least one row and an adjacent row, and that further intersects with a singulation axis defined between the at least one row and another adjacent row.

34. **(Original)** The assembly of claim 33, wherein the substrate material further comprises a plurality of columns of circuit forming regions.

35. **(Original)** The assembly of claim 33, wherein the substrate material further comprises:
first and second opposed edges; and

a first interconnection region and a second interconnection region, wherein the first interconnection region extends along the first edge and is located between the first edge and a first end row of the plurality of rows of circuit forming regions, wherein the second interconnection region extends along the second edge and is located between the second edge and a second end row of the plurality of rows of circuit forming regions, and further wherein one or more openings defined in the substrate material separating adjacent circuit forming regions in the first and second rows extend into at least one or more portions of the first interconnection region and second interconnection region, respectively.

36. **(Original)** The assembly of claim 33, wherein the plurality of rows of circuit forming regions lie along a length of the substrate material, the length being defined along a longitudinal axis.

37. **(Original)** The assembly of claim 36, wherein the substrate material further comprises a first edge and a second edge, wherein both the first edge and a second edge of the substrate material are substantially parallel to the longitudinal axis.

38. **(Original)** The assembly of claim 36, wherein the at least one opening has a first and second opposing end portion, the first end portion of each opening lying along a first singulation axis of the substrate material parallel to the longitudinal axis and the second end portion of the at least one opening lying along a second singulation axis of the substrate material parallel to the longitudinal axis.

39 **(Original)** The assembly of claim 38, wherein the at least one opening is a single slot extending generally perpendicular to the longitudinal axis.

40. **(Original)** The assembly of claim 36, further comprising one or more circuits formed in the adjacent circuit forming regions of the substrate material resulting in adjacent individual circuit board portions, wherein the adjacent individual circuit board portions have a length orthogonal to the longitudinal axis.

41. **(Original)** The assembly of claim 40, wherein the at least one opening separating the adjacent individual circuit board portions has a length that is orthogonal to the longitudinal axis, and further wherein the length of the at least one opening is greater than the length of the adjacent individual circuit board portions.

42. **(Original)** The assembly of claim 40, wherein the one or more circuits comprise ball grid array configurations.

43. **(Original)** The assembly of claim 40, wherein the one or more circuits comprise surface mount component configurations.

44. **(Original)** The assembly of claim 36, wherein the at least one opening comprises a slot orthogonal to the longitudinal axis.

45. **(Original)** The assembly of claim 36, wherein the at least one opening is configured such that the plurality of circuit forming regions are separable by using a material removal tool operable to move along one or more singulation axes.

46. **(Original)** The assembly of claim 45, wherein the material removal tool comprises a routing tool.

47. **(Original)** A circuit board substrate assembly comprising:

a substrate material having a length defined along a longitudinal axis;

a plurality of rows of circuit forming regions of the substrate material aligned parallel to the longitudinal axis;

one or more circuits formed in the circuit forming regions resulting in rows of individual circuit portions lying along the length of the substrate material parallel to the longitudinal axis, wherein each individual circuit portion comprises a first end portion and a second end portion, and further wherein each individual circuit portion in a row is separated from each adjacent individual circuit portion in the row by an opening;

a plurality of interconnection regions extending along the length of the substrate material parallel to the longitudinal axis, wherein the first and second end portions of each individual

circuit portion are adjacent to an interconnection region; and

a singulation axis defined along the length of the substrate material within each of the plurality of interconnection regions, wherein each singulation axis is parallel to the longitudinal axis, wherein the opening separating each individual circuit portion in a row from each adjacent circuit portion in the row extends into an interconnection region adjacent the first end portion of the individual circuit portion and intersects with a singulation axis lying within such interconnection region, and further wherein such opening extends into an interconnection region adjacent the second end portion of the individual circuit portion and intersects a singulation axis lying within such interconnection region.

48. **(Original)** The assembly of claim 47, wherein the opening is a single slot extending generally orthogonal to the longitudinal axis.

49. **(Original)** The assembly of claim 47, wherein at least one of the individual circuit board portions has a length orthogonal to the longitudinal axis extending between the first end portion and second end portion thereof.

50. **(Original)** The assembly of claim 49, wherein the opening has a length that is orthogonal to the longitudinal axis, and further wherein the length of the opening is greater than the length of the at least one individual circuit board portion.

51. **(Original)** The assembly of claim 47, wherein the opening comprises a slot.

52. **(Original)** The assembly of claim 47, wherein the opening is configured such that the individual circuit board portions are separable by using a material removal tool operable to move along one or more of the singulation axes defined along the length of the substrate material.

53. **(Original)** The assembly of claim 47, wherein one or more of the individual circuit portions comprise ball grid array configurations.

54. **(Original)** The assembly of claim 47, wherein one or more of the individual circuit portions comprise surface mount component configurations.

55. **(Original)** A circuit board substrate assembly comprising:

a substrate material having a length defined along a longitudinal axis;

a plurality of rows of circuit forming regions of the substrate material aligned parallel to the longitudinal axis;

one or more circuits formed in the circuit forming regions resulting in a plurality of rows of individual circuit portions lying along the length of the substrate material parallel to the longitudinal axis, wherein each individual circuit portion in a row is separated from each adjacent individual circuit portion in the row by an opening;

at least one row of the plurality of rows of individual circuit portions being adjacent a first interconnection region and a second interconnection region, wherein the first interconnection region and the second interconnection region lie along the length of the substrate material parallel to the longitudinal axis, wherein the first interconnection region is located between the at least one row of individual circuit portions and an adjacent row of individual circuit portions, and further wherein the second interconnection region is located between the at least one row of individual circuit portions and another adjacent row of individual circuit portions; and

a first singulation axis and a second singulation axis, wherein the first singulation axis and the second singulation axis lie along the length of the substrate material parallel to the longitudinal axis, wherein the first singulation axis is defined in the first interconnection region, wherein the second singulation axis is defined in the second interconnection region, wherein the opening separating each individual circuit portion of the at least one row from each adjacent

circuit portions in the at least one row extends into the first interconnection region and the second interconnection region, and further wherein the opening intersects the first singulation axis and the second singulation axis.

56. **(Original)** The assembly of claim 55, wherein the opening is a single slot extending generally orthogonal to the longitudinal axis.

57. **(Original)** The assembly of claim 55, wherein at least one of the individual circuit portions has a length orthogonal to the longitudinal axis.

58. **(Original)** The assembly of claim 57, wherein the opening has a length that is orthogonal to the longitudinal axis, and further wherein the length of the opening is greater than the length of the at least one individual circuit portion.

59. **(Original)** The assembly of claim 55, wherein the opening comprises a slot.

60. **(Original)** The assembly of claim 55, wherein the opening is configured such that the individual circuit portions are separable by using a material removal tool operable to move along one or more of the singulation axes.

61. **(Original)** The assembly of claim 55, wherein one or more of the individual circuit portions comprise ball grid array configurations.

62. **(Original)** The assembly of claim 55, wherein one or more of the individual circuit portions comprise surface mount component configurations.

63. **(Withdrawn)**

64. **(Withdrawn)**

65. **(Withdrawn)**

66. **(Withdrawn)**

67. **(Withdrawn)**

68. **(Withdrawn)**

69. **(Currently Amended)** A circuit board substrate assembly comprising:

a substrate material having first and second opposed edges, the substrate material comprising:

a plurality of circuit forming regions comprising at least one pair of adjacent circuit forming regions;

a first interconnection region and a second interconnection region, wherein the first interconnection region extends along the first edge and is located between the first edge and the plurality of circuit forming regions, wherein the second interconnection region extends along the second edge and is located between the second edge and the plurality of circuit forming regions; and

a plurality of openings defined in the substrate material, wherein at least one opening is defined in the substrate material between each pair of adjacent circuit forming regions, wherein the at least one opening extends into at least portions of both the first interconnection region and second interconnection region; and

one or more circuits formed in one or more of the circuit forming regions of the substrate material resulting in a packaged individual circuit in each of the one or more circuit forming regions, wherein each packaged individual circuit is formed in the substrate material adjacent to and non-overlapping with the at least one opening.

70. **(Previously Added)** The assembly of claim 69, wherein the substrate material further

comprises a first end and a second end, wherein the plurality of circuit forming regions lie along a length of the substrate material between the first end and the second end, the length being defined along a longitudinal axis.

71. **(Previously Added)** The assembly of claim 70, wherein both the first edge and second edge of the substrate material are substantially parallel to the longitudinal axis.

72. **(Previously Added)** The assembly of claim 70, wherein the at least one opening comprises a first and second opposing end portion with the first end portion thereof lying along a first singulation axis of the substrate material parallel to the longitudinal axis and the second end portion of the at least one opening lying along a second singulation axis of the substrate material parallel to the longitudinal axis.

73. **(Previously Added)** The assembly of claim 70, wherein the at least one opening is a single slot extending generally orthogonal to the longitudinal axis.

74. **(Previously Added)** The assembly of claim 73, wherein at least one packaged individual circuit has a length orthogonal to the longitudinal axis, wherein the at least one opening has a length that is orthogonal to the longitudinal axis, and further wherein the length of the at least one opening is greater than the length of the at least one packaged individual circuit.

75. **(Previously Added)** The assembly of claim 69, wherein the packaged individual circuits comprise ball grid array configurations.

76. **(Previously Added)** The assembly of claim 69, wherein the packaged individual circuits comprise surface mount component configurations.

77. **(Previously Added)** The assembly of claim 69, wherein the at least one opening comprises a slot extending into at least portions of the first and second interconnection regions.

78. **(Previously Added)** The assembly of claim 69, wherein the at least one opening between each pair of adjacent circuit forming regions is configured such that the plurality of circuit forming regions are separable by using a material removal tool operable to move along one or more parallel singulation axes to remove at least portions of the first and second interconnection regions.

79. **(New)** A circuit board substrate assembly comprising:

a substrate material having first and second opposed edges, the substrate material comprising:

a plurality of circuit forming regions comprising at least one pair of adjacent circuit forming regions;

a first interconnection region and a second interconnection region, wherein the first interconnection region extends along the first edge and is located between the first edge and the plurality of circuit forming regions, wherein the second interconnection region extends along the second edge and is located between the second edge and the plurality of circuit forming regions; and

a plurality of openings defined in the substrate material, wherein at least one opening is defined in the substrate material between each pair of adjacent circuit forming regions, wherein the at least one opening extends into at least portions of both the first interconnection region and second interconnection region; and

one or more circuits formed in one or more of the circuit forming regions of the substrate material resulting in a packaged individual circuit in each of the one or more circuit forming regions, wherein each packaged individual circuit is formed in the substrate material adjacent the at least one opening, and further wherein the packaged individual circuits comprise ball grid

array configurations.

80. **(New)** The assembly of claim 79, wherein the substrate material further comprises a first end and a second end, wherein the plurality of circuit forming regions lie along a length of the substrate material between the first end and the second end, the length being defined along a longitudinal axis.

81. **(New)** The assembly of claim 80, wherein both the first edge and second edge of the substrate material are substantially parallel to the longitudinal axis.

82. **(New)** The assembly of claim 80, wherein the at least one opening comprises a first and second opposing end portion with the first end portion thereof lying along a first singulation axis of the substrate material parallel to the longitudinal axis and the second end portion of the at least one opening lying along a second singulation axis of the substrate material parallel to the longitudinal axis.

83. **(New)** The assembly of claim 80, wherein the at least one opening is a single slot extending generally orthogonal to the longitudinal axis.

84. **(New)** The assembly of claim 83, wherein at least one packaged individual circuit has a length orthogonal to the longitudinal axis, wherein the at least one opening has a length that is orthogonal to the longitudinal axis, and further wherein the length of the at least one opening is greater than the length of the at least one packaged individual circuit.

85. **(New)** The assembly of claim 79, wherein the at least one opening comprises a slot extending into at least portions of the first and second interconnection regions.

86. **(New)** The assembly of claim 79, wherein the at least one opening between each pair of adjacent circuit forming regions is configured such that the plurality of circuit forming regions are separable by using a material removal tool operable to move along one or more parallel singulation axes to remove at least portions of the first and second interconnection regions.